

GRADE TWO SPRING NATURE WALK
Soil

OBJECTIVES:

- Examine and compare soil in different environments, observing color, texture, and smell.
- Discover what is in soil.
- Learn about the role of living things in making soil.
- Learn about the importance of non-living things in soil.
- Collect soil samples for classroom activities

PREPARATION:

Room Parent

- **Logistics:**
 - **Time:** 45 minutes
 - **When:** Schedule this walk after the ground has dried enough to dig a hole several inches deep and explore soil layers.
 - **Groups:** 4
 - **Sample Sites:** 1) sand 2) soil in the meadow just below the surface, 3) subsoil several inches down in the same hole 4) soil in the woods, 5) site chosen by children.
- Schedule parents. Copies of walks available in storeroom.
- Ensure no overlaps with other classes by checking the schedule in the BBB cabinet. Update BBB schedule with class time by writing Time/Grade/Teacher in correct date.
- Remind teachers to notify the school nurse one week ahead of the walk so the nurse can check for allergies in the classroom.
- Label sets of clear plastic cups (in BBB cabinet) with the numbers 1-5, 1 set per group.

Teacher

- Complete thr Pre-Walk Activities
- Complete the Post-Walk Curriculum Integration Opportunities

PTA Big Backyard Coordinator

Make copies of Soil sample Worksheets (1set /student)

Questions/Comments?

Please contact the current PTA Big Backyard coordinator

MATERIALS for each small group of students:

- Trowel.
- 5 clear plastic cups labeled #1 through #5.
- Box for carrying cups, (a shoe box works well).
- Hand lenses.
- Clipboard, Soil Sample Worksheet, pencil.

ACTIVITIES:

- Observe soil in different sites, noting differences.
- Collect samples from 5 different places (grass, swings, baseball field, woods, plus site of choice) and record observations on Soil Sample Worksheet.
- Observe and explore decomposition in the woods.

AFTER THE WALK:

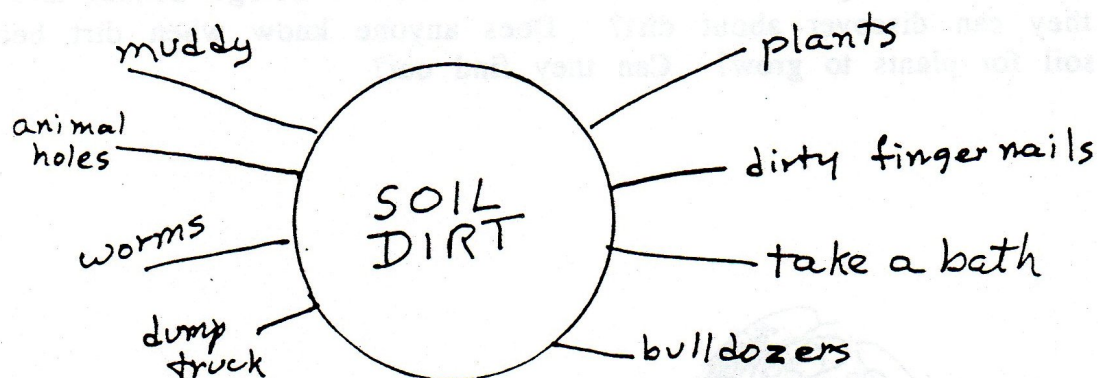
- Leave Soil Sample Worksheets and soil samples, with the teacher.
- Return all materials to BBY room.

PRE-WALK ACTIVITIES: TO BE LED BY THE TEACHER CLASSROOM

Note: This walk should be taken toward the end of the Soils unit, prior to Lesson 14.

1. Science Connection: Soils.

Ask: *What do you think about when someone says “dirt” or “soil”?* Construct a mind web using children's ideas.



2. Science Connection: Soils. Summarize the findings of Lesson 1.

Ask: *What is soil made of?* Make a list of children's ideas, asking them to give reasons for what they say based on their observations of soil both in the classroom and outdoors. Explore their ideas. Children will probably list things like sand, mud, dead leaves, roots, sticks. Have children divide their list into non-living things and things that were once alive (once-living). Be sure they understand that sand and mud come from broken up rocks and are thus non-living, while leaves and sticks were once alive. Scientists call the non-living components of soil **minerals**. They call the once-living components of soil **humus**.

Ask: *Is all soil made up of the same kinds of things? Is all soil made up of both non-living things and things that were once alive? How can you find out? (Go out and collect samples of soil from different places.) Where do you find soil? List all places such as the ball field, the woods, a garden, a flowerpot, a farmer's field, lawns at school and home. Ask: Will all handfuls of soil look exactly the same no matter where you find the soil? Is all soil the same color? What does soil feel like? Is all soil good for plants to grow in? What might make soil samples different from each other? We will find out on our Big Backyard walk!!!*

NATURE WALK: TO BE LED BY BIG BACKYARD VOLUNTEER

1. Observing different colors of soil in the schoolyard.

- Walk outside. Look around and identify different colors of soil. (Brown soil in the woods and in the grass, piles of lighter color soil in the woods, the lighter color of the baseball diamond soil, the light colored sand near the swings.)
- Walk onto the blacktop. Ask: *What do you see in the cracks?* (Soil, plants, an anthill.) Ask: *Is there soil under the blacktop?* Find an edge of the blacktop and look under it. *Is there some soil scattered on top of the blacktop? What does it feel like? What color is it? Is this soil?*
 - Pick up some soil and feel it. Have the children roll some between their hands. (It will feel gritty).
 - Look at this soil with a hand lens. Ask: *What do the grains look like? Are they all the same?* (The grains may be different colors; these are mostly bits of broken rock called minerals; minerals have uniform properties like color, hardness, and the way they reflect light.)

2. Collect different samples of soil.

The collecting sites are:

- #1 Sand near the swings
 - #2 Soil from a hole dug into the grass about 4 inches deep.
 - #3 Sub-Soil about 2 more inches down in the same hole
 - #4 Soil found under fallen leaves in the woods and under rotting logs (woods).
 - #5 A collection site chosen by children such as: mud, soil under the pine trees etc.
- Each group of children will collect samples in their marked containers. Each group will also help you to fill out the worksheet describing their samples. For each sample, children should:
 - Touch the soil. Describe what the soil feels like. (Dry, moist, wet, sticky, smooth gritty.)
 - Rub some soil between their fingers and smudge it on the worksheet to denote color.
 - Smell the soil.
 - Look at the sample with a hand lens. Note the size and shape of the particles.
 - Note anything in the sample besides soil. (Living things, and non-living things, etc.)
 - Dig down a couple of inches using the trowels. Notice whether or not the soil changes as they dig deeper.
 - Fill in their holes and replace any clumps they have removed.



- **Sample #1: sand near the swings.**

Collect a sample of sand. Ask: *Is sand soil?* (Yes, it just has more minerals and less darker once-living material such as leaves and roots.) Children may notice sparkly grains of mica, a mineral.

- Dig down a couple of inches. *What color is the sandy soil here? Does the soil change color as you dig deeper?* (The sand and the reddish subsoil is made mostly of minerals--broken up rocks.)
- Ask children to compare the number of plants growing in the sandy soil with the number of plants growing in the soil from the grassy area. (Fewer plants in sandy soil.)

- **Sample #2: soil in the grassy area -4" down.**

Remove a plug of grass. Look at the soil around the roots. Have a child collect a trowel full of dark soil from the grassy area for cup #2. Give a pinch of this soil to each child. Ask: *Is the soil here the same color as the soil on top of the blacktop?* (This soil will likely be darker in color.)



- Look at this soil with a hand lens. Ask: *How does it look different from the soil on the blacktop? Do you recognize any of the tiny pieces?* (Has more roots, and pieces of leaves; has fewer mineral bits.) *How does it feel different?* (Softer, less gritty, smaller particles.) Smell the soil. Ask: *What do you notice? Are you finding any living things?* (Living things such as earthworms, insects, and fungi help turn once living things into soil.) *Any non-living things such as pebbles or grains of sand?* Have children help you with descriptions of the soil for #2 on the Soil Sample Worksheet.
- Look for worm castings (worm poop) on top of the soil in the grassy area and notice the color. (Dark brown—matches the soil color.)

- **Sample 3: Subsoil in grassy area 6" down**

- Continue to dig another two inches. Ask: *Is the dirt the same as you dig deeper?* Collect sample #3 from deep in the hole. Ask: *Any ideas why the soil changes color?* (The light dirt at the bottom of the hole is called subsoil and is mostly broken up rock particles, sand and gravel.)
- Discuss how this sample differs from both the sand and the topsoil samples. Ask: *Why do you think they are different?*
- Ask: *Would they choose the dark brown topsoil or subsoil or sand for planting plants in a flowerpot. Why?* (Has more items that can nourish a plant)
- Be sure children fill in their holes and replace the grass clump.



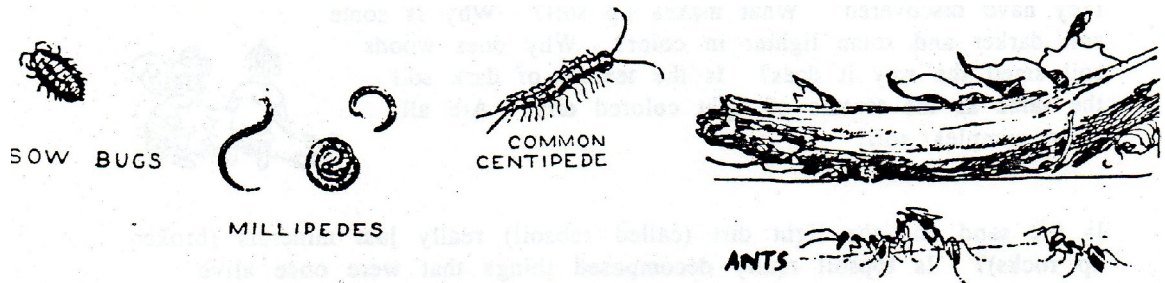
- **Sample 4: soil from the woods.**

Enter the woods at the back of the schoolyard, and find a hollow where the leaves have collected. Have children gently pull back the top layer of leaves that fell last year. Underneath are pieces of leaves. As children dig down they will discover smaller and smaller pieces of leaves and roots mixed with dark brown soil. Scientists say they are **decomposing** and helping to make soil. Tiny living plants and animals help dead leaves



and logs decompose and become soil. Some tiny living creatures live in the soil. Ask: *How far do you have to dig to find non-living things?* Ask: *What is the color of this woodland soil?* Invite students to smell a pinch of this soil. *What does it smell like?* (Possibly, potting soil.) *Why is this soil so different from the other samples?* (It has more decomposing once-living things in it.)

- Compare soil from the woods (Sample #4) to soil they dug in the sand near the swings (Sample #1) and soil they dug in the grass (Sample #2). *Why was there dark brown soil where there was grass, and only light colored soil underneath the swings where no plants are growing?* (The dark color is from decomposed plants.)
- *What type of soil seems best for growing plants? What makes you think this?* (Soil with both once-living and minerals in it is best; more plants are growing in dark soil.)
- Turn over a decomposing log and touch it. Notice any small animals, insects, or plants. (Worms, ants, sow bugs, millipedes, centipedes, fungi, etc.)



- **Sample 5: soil from a site chosen by the children.**

Some interesting choices might include:

- Dirt and gravel piles near the brook
- Mole hills or meadow vole tunnels
- By the trees
- The muddy edge of the brook
- An ant hill or worm casting
- The ballfield (with adult supervision so no holes are left to trip ball players.)

Let children come up with their own ideas, but encourage some diversity. Write on the last worksheet the source of sample #5.

3. Wrap-up.

- After worksheets are completed, sit down on the grass with the five samples to review what they have discovered. Ask:
 - *What makes up soil?* (Soil is made up of things that were once alive, such as dead leaves and sticks—called **humus**; and of non-living things such as broken up rocks, and sand—called **minerals**.)
 - *Why is some soil darker and some lighter in color?* (Decomposed once-living material is dark brown. Broken rock bits can be lighter in color. The kind of soil depends on the amount and kind of minerals and the amount of once-living material.)
 - *Can you tell by looking at a sample if it came from the woods or a meadow or a sand box? How?* (Color, type of material.)
- Walk back to the school.
- Give the Soil Sample Worksheet, and the sample cups, to the teacher.
- Return all materials to the Big Backyard cabinet

**POST-WALK CURRICULUM INTEGRATION OPPORTUNITIES: TO BE
CHOSEN AND LED BY THE TEACHER**

1. Science Connection: Soils.

Follow up by asking students to compare samples #1, #2, and #3 with samples collected by other groups. Ask: *Are these alike or different? How could you tell where the sample was from if you didn't see the number on the cup?* (Samples from a particular location will be similar in color and texture.) *How do samples #2, #3 and #4 from your Big Backyard compare to soil samples from the Soils kit? Using information from your classroom soil samples, what would you name these soils from the Big Backyard walk?* (#1 = sand from playground, #3 = sub-soil from grassy area, #4 = humus from woods, #2 soil from grassy area may be mixture)

Use the Mystery Sample, #5 in Lesson 14.

2. Science Connection: Soils.

Ask: *Which Big Backyard soil sample reminded you most of the material in your compost bags? Why?* (Humus had bits of leaves and roots; once-living things were decomposing.) *Can you think of any ways you could make more soil at home? Do any of you compost your leaves at home? How and why do you do this? What kinds of things could you put in a compost pile to decompose and turn into soil?* (Leaves, grass clippings, vegetable trimmings, etc.)

3. Science Connections: Soils.

In small groups have children make a list of things they have learned about soil this year. Ask: *What did you learn that surprised you? How do you think soil is important?*

Name: _____

Date: _____

SOIL SAMPLE WORKSHEET

SAMPLE # 1: SAND Describe how the sand:

Feels:

Smells:

Color:

Smudge:

List things found in the sandy soil, size of particles:

SAMPLE #2: GRASSY AREA 4" DOWN Describe how the soil:

Feels:

Smells:

Color:

Smudge:

List things found in grassy area soil, size of particles:

10/11

Name: _____

SAMPLE #3: GRASSY AREA 6" DOWN Describe how the soil:

Feels:

Smells:

Color:

Smudge:

List things found in the sub- soil, size of particles:

SAMPLE # 4: WOODS. Describe how the soil:

Feels:

Smells:

Color:

Smudge:

List things found in the woods soil:

SAMPLE #5: MYSTERY SOIL

Where was the sample taken from?

NATURE WALK EVALUATION
(Please leave in Big Backyard Room)

Walk Leader: _____

Grade and Teacher: _____ **Date:** _____

Children in Group: _____

1. What parts of the walk interested the children the most? (check all that apply)

Soil colors	Collecting sample 4	
Collecting sample 1	Collecting mystery sample 5	
Collecting sample 2		
Collecting sample 3		

Other: _____

2. What parts were not successful? (check all that apply)

Soil colors	Collecting sample 4		
Collecting sample 1	Collecting mystery sample 5		
Collecting sample 2			
Collecting sample 3			

Other: _____

3. This walk was: (circle one) TOO LONG JUST RIGHT TOO SHORT

4. The children seemed adequately prepared: (circle one) YES NO

5. This was a good working group: (circle one) YES NO

6. I felt adequately prepared to lead this walk: (circle one) YES NO

7. Other comments or suggestions: